

# Project Scheduling: Building a PS&E Submittal Schedule

## Welcome

Welcome to Smart Scheduling. We're going to take a look at developing successful project schedules for Caltrans Highway Projects.

We're all familiar with the old adage, "when we fail to plan, we plan to fail."

Project scheduling is about creating a plan. A plan that will guide us along a timeline of critical tasks for a project with a deadline for completion.

## Theory

Project management theory explains a project as "a temporary effort to create a unique product or service. Projects usually include constraints and risks regarding cost, schedule or performance outcome (Chapman, 1997)."



This fits well with Caltrans' practice. While some projects may seem like they never end, most highway projects are temporary efforts.

And while some projects may be very similar, no two are exactly the same. Different locations, engineering requirements, private ownerships, contractors, and political interests all combine to make each project a unique product or service.

Unfortunately, our projects also include constraints, many many constraints. Imagine what we could build with unlimited time and money with the freedom to build what we want, when we want, where we want and how we want. Constraints are the hard realities of life and projects are not immune to that fact.

When we work on projects and try to control the outcomes of our efforts we are performing project management.

“Project management is a set of principles, practices, and techniques applied to lead project teams and control project schedule, cost, and performance risks to result in delighted customers (Chapman, 1997).”

In this course we are only going to deal with one aspect of project management. Project scheduling for highway projects can be very daunting. So many different variables combine to complicate the process that it is very difficult to plan for every contingency. However, with some foresight and a little understanding about the process we can build schedules that will be flexible and accurate enough to help us meet our deadlines.

Chapman shares his views on the challenges of project scheduling:

“Scheduling is an inexact process in that it tries to predict the future. While it is not possible to know with certainty how long a project will take, there are techniques that can increase your likelihood of being close. If you are close in your planning and estimating, you can manage the project to achieve the schedule by accelerating some efforts or modifying approaches to meet required deadlines (1997).”

In this course we are going to learn a lot about Caltrans specific scheduling issues. But first, let's get started with a fun game about project scheduling.

*Chapman, J. R., (1997), Project schedule estimating, Principle Based Project Management, retrieved on 1/16/2007 from <http://www.hyperhot.com/project.htm>*

## **Resources**

Below you will find a list of resources that were covered throughout the course. These resources will help you with future projects and will continue to be available to you.

### **External Resources**

- CTC Dates - <http://www.catc.ca.gov/meetings/index.htm>
- The Beavers - <http://www.thebeavers.org/>
- California State Holiday Schedule - <http://www.dpa.ca.gov/>

## Internal Resources

### Advertising Periods

*Per Rick Land's Approved Decision Doc 12/21/06*

PROJECT SIZE	ADVERTISING PERIODS
Safety Projects .010	3 Weeks
< 50 Items / Plan Sheets	4 Weeks
> 50 to 100 Items / Plan Sheets	5 Weeks
> 100 Items / Plan Sheets	7 Weeks

The greater amount between items vs. plan sheets shall determine advertising period.

### PS&E Submittal to Construction Contract Approval Timelines

*Division of Engineering Services-Office Engineer - (All estimates in weeks unless otherwise noted)*

	FLEXIBLE TIMEFRAMES					NON-FLEXIBLE TIMEFRAMES			
	PS&E TO DRAFT CONTRACT	DRAFT CONTRACT TO DISTRICT RESPONSE	DISTRICT RESPONSE TO DRAFT CONTRACT READY	DCR TO RTL	RTL TO FUND CERTIFICATION	FUND CERTIFICATION TO ADVERTISEMENT	ADVERTISEMENT TO BID OPENING	BID OPENING TO AWARD	AWARD TO APPROVAL
WBS CODE	260.60	260.70	260.80	260.90		265.5	265.55	265.65	265.70
PROJECT TYPE OR COST									
AADD	0	0	0	0	0	3	See Advertising Periods Matrix	4	2
MAINTENANCE & MINOR A	6	5	1	1	0	3	See Advertising Periods Matrix	4	2
<\$2M	6	5	1	1	9	3	See Advertising Periods Matrix	4	2
\$2M-10M	7	6	1	1	12	3	See Advertising Periods Matrix	4	2
\$10-25M	8	6	1	1	12	3	See Advertising Periods Matrix	4	2
\$25-50M	9	7	1	1	12	3	See Advertising Periods Matrix	4	2
\$50-100M	10	7	1	1	12	3	See Advertising Periods Matrix	4	2
\$100-200M	14	10	1	1	12	3	See Advertising Periods Matrix	4	2
>\$200M	14	10	1	1	12	3	See Advertising Periods Matrix	4	2

## Smart Scheduling Glossary

Below is a glossary of Milestones and Activities that you will need to have handy for future projects. This glossary outlines the details about each particular milestone or activity. These will continue to be available to you.

Want to print a copy of this glossary? [Click here to open the printable version \(pdf file\).](#)

**MILESTONE: Plans, Specifications & Estimate Submittal (PS&E Submittal) M 380**

**Responsible Party:** District

**Precursor Activity:** The District has completed and compiled Plans, Specifications and Estimates to submit to DES-OE for review.

**Successor Activity:** Prepare Draft Contract

**Description:** This milestone is a complete project submittal from the District to DES-OE ready for processing.

**ACTIVITY:** Prepare Draft Contract – WBS 260.60

**Responsible Party:** DES-OE

**Duration:** 6-14 weeks

**Precursor Activity:** PS&E Submittal

**Successor Activity:** Draft Contract Comments

**Description:** During this activity the Draft Contract Comments (DCC) are prepared. The DCC is a list of potential violations of legal, cost avoidance standards in accordance with the RTL Guide. DES-OE verifies completion of the BEES, Plans & Specifications.

**ACTIVITY:** Prepare Draft Contract  
WBS 260.60

**Responsible Party:** DES-OE

**Duration:** 6-14 weeks

**Precursor Activity:** PS&E Submittal

**Successor Activity:** Draft Contract Comments

**Description:** During this activity the Draft Contract Comments (DCC) are prepared. The DCC is a list of potential violations of legal, cost avoidance standards in accordance with the RTL Guide. DES-OE verifies completion of the BEES, Plans & Specifications.

**MILESTONE:** Draft Contract Comments  
M 390

**Responsible Party:** DES-OE

**Precursor Activity:** Prepare Draft Contract

**Successor Activity:** Prepare District Response

**Description:** This milestone is when the Draft Contract Comments are summarized and sent to the District in memo form. This informs the District about changes that need to be made to the PS&E package to comply with the State Contract Act.

**ACTIVITY:** Prepare District Response  
WBS 260.70

**Responsible Party:** District

**Duration:** 5-10 weeks

**Precursor Activity:** Draft Contract Comments

**Successor Activity:** District Response

**Description:** This activity involves the District preparing a response to the Draft Contract Comments (DCC). Resolution of comments involves revision of plans, specification and estimates, negotiation of compromises and documentation where suggestions were not incorporated.

**MILESTONE:** District Response  
M 400

**Responsible Party:** District

**Precursor Activity:** Prepare District Response

**Successor Activity:** Incorporate District Response

**Description:** This milestone is complete when the District sends their final responses and comments addressing the Draft Contract Comments to comply with the State Contract Act.

**ACTIVITY:** Incorporate District Response  
WBS 260.80

**Responsible Party:** DES-OE

**Duration:** 1 week

**Precursor Activity:** District Response

**Successor Activity:** Draft Contract Ready (DCR)

**Description:** This activity involves DES-OE incorporating comments from the District Response to finalize the concerns addressed in the Draft Contract Comments. DES-OE then prepares the Draft Contract Ready (DCR) Memo.

**MILESTONE:**    **Draft Contract Ready (DCR)**  
                             **M 430**

**Responsible Party:** DES-OE

**Precursor Activity:** Incorporate District Response

**Successor Activity:** Constraints Clear

**Description:** This milestone is complete when DES-OE Spec. Engineers work on finalizing the plans, specifications and estimate, providing contract quality feedback and final PS&E for district review. DES-OE will notify the District in approximately one week with a Draft Contract Ready Memo and supporting documents.

**ACTIVITY:**    **Clear Constraints**  
                             **WBS 260.90**

**Responsible Party:** District

**Duration:** Varies depending on District's ability to clear all necessary constraints (average 1 week between the DCR milestone).

**Precursor Activity:** Draft Contract Ready (DCR)

**Successor Activity:** Ready to List (RTL)

**Description:** This activity involves the District clearing constraints early in the project. Some constraints may take longer to clear depending on the complexity of the project. All constraints must be cleared before the project can achieve Ready to List (RTL). Ready to List (RTL) means that the State has all rights and

agreements in place to construct the project and is ready to acquire a contractor to perform the work.

It is the District's responsibility to plan ahead to clear constraints. Possible constraints to consider include:

- Acquiring Right of Way
- Environmental Concerns
- Army Corp. Permits
- Fish and Game Permits
- Coastal Commission Permits
- Local Encroachment Permits

**MILESTONE:    Ready to List (RTL)**  
**M 460**

**Responsible Party:** District

**Precursor Activity:** Clear Constraints

**Successor Activity:** Obtain Funding

**Description:** This milestone is complete when DES-OE notifies district staff about outstanding RTL requirements and validates completion of RTL requirements. DES-OE will inform the District when the RTL Certification form is available to be signed, sealed and returned to DES-OE. When the signed/sealed certification is received the date for RTL has been met. RTL is the delivery date for all projects. This date is also used for delivery on the Governor's Contract for Delivery (CFD) list.

- For AADD projects the RTL Certification is included with the AADD submittal. AADD is Authority to Advertise District Delegation.
- If the project requires a CTC (California Transportation Commission) vote, RTL must be completed six weeks prior to the CTC vote.

**ACTIVITY:    Obtain Funding**  
**WBS 265.45 (proposed for WGS 10.0)**

**Responsible Party:** District

**Duration:** 6-12 weeks (See Timeline Chart)

**Precursor Activity:** Ready to List (RTL)

## **Successor Activity: Fund Certification**

**Description:** This activity involves, the District Project Manager (PM) insuring that the project is fully funded. The PM must also secure signed, legal binding documents to guarantee shared responsibility by all local entities that will be contributing to the cost of the project. The PM must certify to DES-OE that all funds required to build the project have been guaranteed, verified and ready to access from all funding sources.

The CTC vote for the State's funding portion may occur during the Fund Verification process.

### **Other Funding Sources:**

During or before the Funds Verification process the District Project Manager should provide fully executed co-op agreements with external partners.

Funding sources in this category include Maintenance funds, OTS, cooperative agreements and other miscellaneous sources.

The District Project Manager should obtain these commitments in advance of RTL. Delays during the Funds Verification process are common and cause delay in project delivery.

### **The CTC Vote:**

The California Transportation Commission (CTC) votes to approve funding for State Capitol Outlay projects. Projects must be Ready to List (RTL) six weeks prior to the CTC Vote.

A schedule for CTC Voting dates and locations of meetings can be found at: <http://www.catc.ca.gov>.

### **Federal Funding (E-76):**

Projects that have federal funding require E-76 documentation. (FHWA Federal Authorization of funds)

Formally called an "Authorization to Proceed," the E-76 is permission from the federal authorities to proceed with a project and is a confirmation that federal funds are committed and available for the project.

The District Project Manager prepares this document and submits it to Federal Resources and Local Assistance for approval. RTL Certification must be complete before the E-76 document is submitted to FHWA.



**FSTIP:**

A project must be on the Federal State Transportation Improvement Program (FSTIP) list to qualify for E-76 eligibility. The Project Manager must verify FSTIP listing to Federal Resources and Local Assistance to proceed with the E-76 approval process.

**MILESTONE: Fund Certification  
M 470**

**Responsible Party:** District PM

**Precursor Activity:** Obtain Funding

**Successor Activity:** Final Bid Document Preparation (Listing Period)

**Description:** This milestone is complete when the Project Manager sends a document to DES-OE certifying that all funding for the project is secure and ready to be allocated for the project. Fund Certification marks the completion of the Fund Verification process.

There is no official form or approved document for Fund Certification. A short and simple letter signed by the PM will be sufficient. A formal document may be developed in the future.

**ACTIVITY: Final Bid Document Preparation  
WBS 265.50**

**Responsible Party:** DES-OE

**Duration:** 3 - 4 Weeks

**Precursor Activity:** Funding Certification and RTL Certification

**Successor Activity:** Advertise

**Description:** Formerly called the Listing Period, during this activity the documents are reviewed for errors and clarity, the Authority to Advertise form is distributed and the project bid documents are prepared for release to the potential bidders. The project information is available in print and may be available on the internet. The project is also listed with the Department of General Services state contract registry at this time.

This is a period of preparation. Information is not released until Advertisement begins.

**MILESTONE:    Advertise  
                         M 480**

**Responsible Party:** DES-OE

**Precursor Activity:** Final Bid Document Preparation

**Successor Activity:** Advertising Period

**Description:** This milestone is complete when the advertising package is being submitted to the contractors to bid.

Advertisement always begins on a Monday unless it is a State holiday (Government Code Section 6700-6720). If the Monday is a holiday the Advertisement will begin on a Tuesday.

**ACTIVITY:    Advertising Period  
                         WBS 265.55**

**Responsible Party:** Contractors

**Duration:** 3-7 Weeks

**Precursor Activity:** Advertise

**Successor Activity:** Bid Opening

**Description:** This activity involves allowing the potential bidders time to review the project bid documents. The duration of the Advertising period is based on the number of bid items or plan sheets. Use the greater number to determine the advertising period with the advertising periods matrix.

**MILESTONE:    Bid Opening  
                         M 490**

**Responsible Party:** DES-OE

**Precursor Activity:** Advertising Period

**Successor Activity:** Award Period

**Description:** This milestone is complete at the physical opening, public reading, recording and verification of bids.

No Bids will be opened on a State holiday or the day after a State holiday. No Bids will be opened during the week of Thanksgiving or during the last two weeks of December.

In the northern districts (1, 2, 3, 4, 5, 6, 9, 10) bids are opened on a Tuesday or a Wednesday. In the southern districts (7, 8, 11, 12) bids are opened on a Thursday.

There are no bids opened on the Beaver Awards or Beaver Dilly dates. If your project is scheduled for Bid Opening on one of these event dates move it to the following week.

You can get information on Beaver Awards or Beaver Dilly dates at:  
<http://www.thebeavers.org/>.

The current Scheduling Calendar can be found at:  
<http://oe.dot.ca.gov/scheduling/index.html>.

**ACTIVITY:**    **Award Period**  
                         **WBS 265.65**

**Responsible Party:** DES-OE

**Duration:** 4-8 Weeks

**Precursor Activity:** Bid Opening

**Successor Activity:** Award

**Description:** This activity involves verifying the submitted bids. The DES-OE Awards Unit evaluates each bid to insure that the contractors do the job meet all requirements for the contract. The DES-OE Award Unit will determine the low bidder that is most responsive and responsible.

**MILESTONE:**    **Award**  
                         **M 495**

**Responsible Party:** DES-OE, District & Contractor

**Precursor Activity:** Award Period

**Successor Activity:** Contract Approval Period

**Description:** This milestone is complete when the contract is awarded to the low bidder who is most responsive and responsible.

**ACTIVITY:**   **Contract Approval Period**  
                          **WBS 265.70**

**Responsible Party:** Contractor

**Duration:** 2 Weeks

**Precursor Activity:** Award

**Successor Activity:** Contract Approved

**Description:** This activity involves a period of two weeks which allows the contractor time to review and approve the contract.

**MILESTONE:**   **Contract Approved**  
                          **M 500**

**Responsible Party:** DES-OE & Contractor

**Precursor Activity:** Contract Approval Period

**Successor Activity:** Begin Construction

**Description:** This milestone is complete when the Contractor signs and returns the contract. The contractor will also provide proof of payment and performance bonds. Copies of the contract are sent to the contractor, the Division of Construction and to the District.

**MILESTONE:**   **Begin Construction**

**Responsible Party:** Contractor & District Construction

**Precursor Activity:** Contract Approved

**Successor Activity:** End of Construction

**Description:** This milestone involves the Contractor beginning work on the project. The Resident Engineer in the Department of Construction takes the project and oversees construction to completion. Construction must begin within

15 days of Contract Approval. Projects that are greater than \$5 million with greater than 200 working days are allowed up to 55 days to begin construction. Authority to Advertise District Delegation (AADD):

For AADD projects, the District is responsible for all "Milestones" and "Activities" normally done prior to Final Bid Document Preparation.

With AADD Projects, Funding Certification and RTL Certification are completed, by the district, prior to submittal to DES-OE. Once the AADD Project is received by DES-OE, the project goes to Final Bid Document Preparation and then follows the established process to construction.

## **Close**

Congratulations on completing this course. You are now prepared to build project schedules for successful and timely PS&E submittal.

You have some great resources available to you that will help you build your PS&E submittal schedules in the future. Don't hesitate to use them.

The resources listed in this course will continue to be available to you.

We wish you success as you apply what you have learned here to your work in the field.

Good Luck.